Sustainable 'v' unsustainable: articulating division in the fashion textiles industry

Abstract

The global Fashion industry is significant, worth 300 billion US Dollars and employs more than 26 million workers (University of Cambridge, 2006). However the industry is changing, due to devaluation of design on the one hand and economic pressure and re-evaluation of design ethics coupled with consumer integrity on the other. This paper addresses the emerging retail landscape, where production and consumption practices are separating like oil and water. We are witnessing a paradigm shift with regard to business models, where the new consumer desires and is demanding high value, performance and smart ethical fashion. These consumers expect co-creation, innovation, opportunities through customisation, supply chain transparency and business integrity, to build an ongoing relationship with a retailers 'no worry' brand. They are generation 'C', who often purchase from virtual retail environments, and who understand the relevance of design for behavioural change, and the true cost of products both in material and human terms. Sustainability, or people, profit, planet, inherent in the bedrock of a cradle-to-cradle fashion textiles system of the near future.

In New Zealand, fashion is worth 326 million NZD in exports (NZTE, 2008) and as elsewhere the insatiability of the mainstream fashion consumer is being satisfied by an escalation of 'pile it high, sell it cheap' outlets. Here the 'dollar a day' dress (Marks, 2005) made by a significant silent workforce of slave labourers, refugees, illegal workers and children exist in the black manufacturing economy, even here in the back streets of Auckland (Cumming, 2002). Consumer responses during the recent recession (Euromonitor, 2010; Vass, 2009) are poles apart, customers buying wisely what is needed, with integrity, in contrast to the pressure of 'buy one, get one free' and the frenzy of a fashion bargain. With these attitudes working in tandem, this paper predicts an unsustainable global manufacturing fashion/textile industry will continue to run parallel to an emerging model of fashion/textiles design and business systems.

Fashion textile literature and theory relating to sustainability is often emotive, fragmented and vague. This positioning paper argues that a polarisation, or separation, of the producer, consumer, disposal and reuse markets is already taking place in the best and the worst of the industry, on every high street and mall. To illustrate this division we have focused on two fictitious adjacent clothing stores in the high street of 2018: we predict a continuation of the unsustainable global manufacturing fashion textile industry as Shop Two; running in parallel to an emerging new paradigm of fashion and textiles found in Shop One.

This thesis has been developed by focussing on issues of sustainability, comparing existing fashion/textile retail supply and disposal chains and analysis of the cause-and-effect, using guiding principles from cradle-to-grave analysis and systemic reasoning. It is underpinned by, and reflects upon the knowledge of current local and global fashion/textile design business practice and data which forms the context for thinking through design to enable change.

Keywords: fashion, textiles, sustainability, cradle-to-cradle, technology, supply chain, consumer, disposal.

1. Background

This paper discusses the unsustainable nature of the current global fashion/textile manufacturing industry, predicting a division in both the producer (fashion leader and fashion follower) market and consumer (fashion leader and fashion follower) market, which will accelerate and become ever more extreme. Lovelock 'the revenge of Gaia' (2006) reviews 30 years of discussion about sustainability and lack of human engagement with the inevitable, encouraging us to retreat from the society we have created due to over production, consumption and waste (Farrer & Goulev, 2006). In 2006 the head of the Roman Catholic Church Pope Benedict reminded us that our extravagant lifestyle is at the expense and exploitation of the World's poor (Catholic News Service, 2006). Such concerns from these leaders are illustrated by worst practice in the global garment industry, fashion retailer and consumer. We argue that polarisation of the industry is beginning to take place as some customers experience choice fatigue, become disenchanted by retailers who continue their patronising approach to consumers, employing dated qualitative research methodology, the cynical smokescreen of fair trade, ethical production and 'green wash'. Fashion consumers are changing, fashion innovators or *'innosumers'* (Farrer & Fraser, 2009) from the generation of co-creators or Generation C (Pearce & Young, 2007), are taking control, customising and co-creating products (for example miadidas.com offers customised shoes to co-create the perfect fitting shoe for their customers) and paving the way to the future they want, fully expecting businesses to 'do the right thing' and forcing change. Where will designers, manufacturers and retailers place themselves in the fashion textile industry of the future and what will they produce?

Discussion of polarity in relation to the fashion textile industry is enabled by the emerging 'sustainable fashion' consumer. Using current production, consumption and disposal business practices gives context to predictions of polarisation and illustrates the complexity of existing supply chain business practice (refer Fig. I). The difficulty that the fashion industry faces, in order to supply the future sustainable and ethical customer, is how to alter their philosophy and business models whilst remaining profitable.

Figure I shows the typical process for development and manufacture of a fashion textile product, commencing with fibre processing, through textile manufacture, garment assembly, distribution, sales and eventual disposal. Most processes could be local but are usually global. This flow chart also points out the various chemical inputs required throughout the manufacture process which are usually not associated with the finished product. Through introducing 'use' and 'disposal' as the follow up phase to 'distribution and 'sales', detergents can be viewed as chemical input, further adding to the complexity of the issues faced by the fashion industry.

Figure I. Fashion and Textile Typical Supply Chain

1.1 Exploring the notion of polarity in the fashion textile context

Polarity between 'leaders and followers' already exists, Bertrandias and Goldsmith (2006) represent the Fashion consumer market by 'Fashion Followers and Fashion Leaders' and similarly Flynn et al (1996) write about 'opinion seekers' versus the 'consumer need for uniqueness'. Birtwistle and Moore (2007) accord Fashion business success as being built on the core concept of 'Fashion Adoption' (refer Fig. II) indicating the industry must embrace trends even if they are unwanted at the outset, and drive them through the business in order to survive. To cater for new consumers, who as Rogers (1983) states 'adopt at different rates', this drive must be done at different speeds with different ranges, retail environments and marketing.

Figure II. Fashion Innovators and Mass Production

Approaching consumption and economic growth from the social dimension Manzini (2005) proposed a shift towards changed consumption, contending its predominance no longer goes unchallenged. In his discussions about the enabling and disabling solutions relating to design, production and sustainability, he suggests knowledge has become incorporated into a 'mono-logical' system, an overly complex and costly system of products and services, designed to

relieve us of the tasks and boring repetitiveness of everyday life. This disabling phenomenon has created a 'population of incapables', we have lost the 'know-how' that enabled us to deal with the most diverse aspects of daily life through this advance in mechanisation. This 'mono-logical' model, when considered for fashion, shows consumers have lost the skill to design, make and reuse clothes, or even to know what to wear. Most importantly, with the loss of knowledge, they are less able to distinguish right and wrong in their choices, which is only exacerbated by vast consumer choice.

This disempowerment is leading to a polarisation between consumers who accept and embrace the status quo in the fashion system and those who question and reject the current model, which is a product of economy of scale, efficiency and shareholder profit. In Jenkin Jones (2002, p.34) discussion of the development of new fashion trends from three cultures (high culture, pop culture and low culture): 'Trickle down' can be interpreted from Figure II as the innovative ideas and styles adopted early by the 'high culture', to be watered down and adopted by 'followers' until it has reached the masses and eventually declines; 'Bubble-up' has the reverse effect, where marginalised groups infiltrate the mainstream to become the new 'cool' and these ideas are taken up through pop culture until it becomes high culture. Similarly if we apply this principle to sustainability and fashion, the same mechanics are at work. The mono-logical system is being challenged by the innovative consumer or '*innosumer*' (Farrer & Fraser, 2009), where the trickle down and bubble up model and the multi option choices of product brands and retail experience is accelerating the polarisation and fragmentation process of the sector in industrialised nations. The demands of the new customer who emerges from this split will necessitate quite different integrated product policy (IPP) for fashion production, retail, consumption and disposal in order to satisfy a more sustainably oriented consumer.

1.2 The fashion textile sustainable consumer paradox

Polarity is increasing due to the current engagement in some parts of the world with the concept of sustainability, which is now being understood in a variety of ways by fashion consumers. Fashion textile business could be seen as incompatible with sustainability, because the very heart of contemporary fashion is design for obsolescence and constant engagement with the new. The core business of fashion is facilitated by fast changing trends leading to premature product replacement and fashion obsolescence. The entrance of fast fashion operators, such as Zara, a specialist fashion chain, credited with being a leader in fast fashion, with rapid stock turnaround and vertical integration (Bruce & Daly, 2006), into the clothing market has further increased competition and rate of obsolescence. Fast Fashion in terms of globalised quick response initiatives provides access to low cost mass manufacturing and a cheaper source of product. This is directly linked to reduced quality, which seems to be an acceptable trade-off by fashion followers for the reduced price.

Figure III. 'Unknown' Jean

In the current market, consumer knowledge of garments is generally limited to basic labelling information such as brand, size, fabric type, care instructions and last country in the manufacturing process. Figure III highlights the lack of supply chain transparency permitted on the label of a denim jean. This example raises questions via the assembly process highlighting the 'unknowns' and indicating how under informed and therefore disempowered the consumer is. Equally we might ask how many companies producing the Brand would 'know' where the cotton for each product was picked? Whether the dye processes were environmentally sound? Where minerals for use in their rivets and studs were mined? Or whether the factory that assembled the zip used child labour?

Alongside customer acceptance of inferior quality products, there is an acceptance that garments might not last as long as more expensive items. So in many cases 'lesser quality' and 'bargain' items correlate with shorter life span and a throw away mentality perpetuating fashion purchase

frequency. This is verified by Birtwistle and Moore (2006) who suggest the increase in fashion purchasing has led to new a phenomenon; that of disposing of garments which may only have been worn a few times. Birtwistle and Moore (2007) later confirmed that 'fast fashion encourages a 'throwaway culture'.

Currently customers can afford to purchase more than they have ever before and are therefore able to throw away more, even taking into account the huge amount of clothing 'warehoused' in customers' homes. More and cheaper suppliers of 'trend' clothing on the high street is available often from un-traceable sources, the clothing has a limited life expectation and has little emotional connection to the customer who bought it. Disposable fashion is thriving. High numbers in minimum orders at ever lower prices has led to brands producing more to sell more to maintain profitability.

Affordability equals disposability in fashion textiles, consumers enjoy a throw-away mentality and increased consumption is synonymous with increased disposal. Postconsumer fashion textile waste is contributing millions of tons to landfill or incineration and to 'ship and dump' recycle systems driven by developed world charities every year (Hawley, 2008). The resulting second-hand clothing trade along with unsold un-used stock still ends up in developing world countries (small amounts are re sold in the donating countries or recycled for rags and for the disappearing shoddy industry refer Fig. IV) but through the second-hand clothing system and green waste shipping or dumping, there continues to be an erosion of indigenous garment industries (Tranberg, 2004; Norris, 2005).

Figure IV. Beyond the Grave

1.3 Beyond the Grave

In contrast to the usual Cradle-to-Grave customer approach, smaller clusters of consumers, aware of environmental and ethical issues and interested in personal or societal change are

turning to alternative models. More discarded clothes are being diverted from landfill and incineration and are channelled into a second or third life through innovative business practices. *'Innosumers'* are challenging the system through innovation, re-fashioning their own wardrobes and co-creating for growing niche markets. Overconsumption of clothing is based on an old model and is not fashionable (Hethorn & Ulasewicz, 2008) and is in fact unsustainable.

In the 21st century the 'environmental' emphasis is being gradually replaced with that of 'sustainability'. The shift of emphasis from 'environment' to 'sustainable' embraces the people 'pillar' where ethics and social development is gaining momentum. In fashion 'business as usual environmental focus' is no longer enough, however many retailers and manufacturers still see sustainability as a marketing opportunity, a trend or a 'bolt on' optional extra without integrity. Unsurprisingly, the concept of sustainability is being understood in a variety of ways by the fashion consumers who are making demands on the industry.

Cradle-to-Cradle, as a guiding principle, was popularised by William McDonough and Michael Braungart (2002). The principle seeks to create efficient production techniques that are essentially waste free, whereby the life cycle of all material inputs and outputs are considered, with each being able to be recycled, reused, composted or consumed. However the concept is acknowledged by academics, designers, manufacturers and business practitioners as hugely complex, difficult to implement and still lacks the focus on the human element. There are few reliable measuring tools and perception of results can be subjective and emotive. Nevertheless, engagement with best practice product management from cradle-to-cradle has started to embed and is now better understood (Butler, 2007). While Brundtland's (1987) description of sustainability (development that meets the needs of the present without compromising the ability of future generations to meet their own needs) includes the people element, it remains an arduous task for the non-expert to understand. The simplest visualisation of sustainability, is the milking stool model with 3 stool legs representing people, profit and planet where all legs are as important as each other supporting the seat or platform of sustainability. This visualisation was

developed from the phrase *triple bottom line* or people profit planet coined by Elkington (1998) who was, co-founder of the business consultancy SustainAbiliy. The milking stool is an important visualisation technique discussed at length by Senge in his book The Fifth Discipline (1990) in which he discusses organisational systems thinking methodology in relation to complex and holistic learning for behavioural change.

It is predictable that initial fashion textile business engagement with sustainability has focused around the environment or planet, which is easiest to relate to as environmental impact, can be seen and is quantifiable. In the last decades of the 20th century terms such as 'eco' and 'green' encapsulated what sustainability represented and those who tried to live more sustainably were often derided and deemed slightly on the fringe of the society they were trying to inform. In the textile sector, Heeley (1999) confirmed that fibre, textile and clothing manufacturers dealt only with environmental issues and then mainly from the manufacturing site, at a management level. Strategies were compliance driven, emphasising waste minimisation and end of pipe pollution controls. Now, however, economics and environment are being shadowed by the new zeitgeist of ethics and empathy.

Both non-expert consumers and retailers are trying to engage with complex issues via a raft of literature, media coverage leading to confusion and negativity fostered by data saturation and misinformation. John Robinson's paper 'Squaring the Circle' (2004) reviews how sustainability has unfolded in industrialised regions since 1987. Three criticisms are at the heart of his thesis, that: sustainability is vague; attracts hypocrites; and fosters delusions. When applied to the fashion consumer his theory could partly explain why consumer engagement in the fashion lifecycle has been so confusing and problematic. He argues for an approach to sustainability that 'is integrative, is action-oriented, goes beyond technical fixes, incorporates recognition of the social construction of sustainable development, and engages local communities in new ways' (p. 369). This is a significant challenge to implement in a truly global fashion industry where the possibilities could be viewed as business opportunities which demand multiple approaches.

2. The Future Retailers - Shop Two

To illustrate our thesis of polarisation we have focused on two fictitious adjacent clothing stores in the high street of 2018. We predict 'Shop One' will attract the opinion formers and 'Shop Two' will attract the fashion followers. We base our predictions for Shop Two on the current production, consumption and disposal business practices of the fast fashion mass manufacture model.

The evolution of Shop Two began in the 20th century, enabled by turn of the century globalisation and the free market business model. It has benefited from reliable communication, developed infrastructure in manufacturing countries, partnership investment in supply chain efficiency and has been enhanced by economic systems such as the proliferation of free trade zones and reduced import tariffs. Digital communication for design, manufacturing and warehousing, coupled with the rapid developments in containerisation and air cargo, has allowed the super efficient mass manufacturing of product to move successfully between the farm, manufacturing and retail sites throughout the newly and established industrialised world. Figure V illustrates the typical fashion textile supply chain against the world map which reflects the complexity of the current globalised industry.

Figure V. Globalisation of the Fashion and Textile Supply Chain

Fashion textile production from Asia and its subcontractors, for example in Cambodia and Vietnam, will continue to produce successful cheap clothing ranges. This combined with ever lower price points, resulting from supplier competition in these manufacturing countries, will uphold continued consumer expectation of minimum prices and a proliferation of ever changing garment lines. Buyers will continue to capitalise on their economic strength through scale, creating opportunities for more sales through increased supplier productivity and efficiency. This will prolong the manufacture of ever larger quantities of fashion textile products for

western markets at considerably lower unit costs from less transparent sources. Issues of poor quality and fit will continue to be secondary to style, speed and price.

3. The Future Retailers - Shop One

'Shop One' for the opinion formers, is predicted from the wealth of literature discussing the emerging 'sustainable fashion' consumer and producer (Aarts & Marzano, 2003; Benyus, 1997; Farrer & Goulev, 2006; Hethorn & Ulasewicz, 2008; Holborn, 1995; Inns, 2007; University of Cambridge, 2006). Shop One has challenged the traditional mechanisms of fashion design production, retail, consumption and disposal, integrating intelligent computing and digital communications into clothing and accessories[i] in order to inform the sustainable debate, change consumer behaviour and empower all users within a product supply and disposal chain (Farrer & Goulev, 2006).

Innovation is everywhere, taking the lead from large industrial fashion manufacturers such as Marks & Spencer, UK, who have supported an apparel Eco-Factory concept in Sri Lanka[ii], to smaller businesses such as Icebreaker Clothing NZ who have begun to make transparent and humanise their supply chain by using barcode technology (the 'BAACODE')[iii] which is accessible to customers. Smart textiles based on biomimicry can produce earth friendly products which compost to become nutrients (Benyus, 1997) and technology exists to design and develop garments with lower fabric consumption and zero waste. 19th and 20th Century business models which use local materials and manufacture close to market are re-emerging. Internet sales, customisation, made to measure and the virtual shop are reducing waste and eliminating the need to tie up capital in the warehouse, creating lean manufacturing. New fashion and sport brands incorporate health, social, environmental, economic and technological information in their clothing[iv] and accessories[v] combining philosophical concepts, emotion, design, information

communications technology and cognitive technologies as a requisite of a brand's unique selling point and corporate social responsibility (CSR)[vi].

In both Shops One and Two, the fashion and textile industry in the developed world will add value to products through Research and Development of smart and technical textiles, incorporating them into everyday clothing to secure sales in top end, niche markets. Ever cheaper 'track and trace' technology[vii] will make transparent the global and local fashion/textile supply, consumption and disposal chain, applying the benefits of 'smarter' technology in relation to issues of people profit planet in fashion and textiles. This will separate the market into those who 'know' and those who 'don't want to know' and the industry will supply accordingly. Currently product and process sustainability checks, balances and accreditations are only affordable for a minority of wealthy farmers, manufacturers and retailers. The increased demand for more sustainably made goods, which it could be argued is used to salve consumer conscience, has created a protectionist ring fence to protect developed world manufacturers and retailers from cheap, unclean unsustainable fashion/textile (University of Cambridge, 2006) imports and exclude unaccredited world sources of supply.

Digitally enhanced clothing which takes advantage of mobile technology and wireless networks will be the new fashion challenge for design customisation and computing. Ubiquitous Computing (in the sense of discreet seamless technology which is present everywhere and invisible) will be used to inform the fashion textile consumer, designer and business in an environmental, social as well as economically positive way for the benefit of all, farmers, makers and retailers addressing emerging social, environmental, personal and technological concerns of all users. Interdisciplinary and applied research collaboration has created new thinking in fashion, sustainability and computing, conveying global supply chain issues and developing consumer preference to brands that cater for the *'innosumers'*. Sustainable development, the fashion industry and the clothing life-cycle from manufacture and supply to disposal, coupled with a deep understanding of modern communications strategies and services

including the role of ubiquitous computing, and a sound experience of experimental method and the application of empirical data will inform retail strategy and new business modes. Ubiquitous computing and digital systems will extend to clothing via smart fibre and fabric and has become a future go-between of an integrated product policy (IPP) in the sustainable fashion and textile lifecycle, passing information to the consumer and back to the retailer through the supply chain. Wearable technology, which was first developed by the electronics and technology sectors used clothing as a carrier of entertainment and communication systems, adding increased bolt on functionality.[viii] Future merchandise uses ubiquitous technology for social inclusion, aesthetics and information exchange, to support sustainable processes and to empower consumers, create value added and trust in the brand which is now seen as a business imperative.[ix]

The merger of fashion and clothing and digital technology has contributed to make computer design more human-centric, individual and emotive. Smart and interactive clothing will in the future connect us to each other, makers and users. Designers will design interactions: 'not only are we designing the new material aspects of objects, but we are also creating new levels of relationships, between ourselves and the things we make, and between individual people and between groups of people mediated by those things'(Aarts & Marzano, 2003). By bringing sensor and network technology into the clothing arena, new forms of communication have been enabled. Technology has promoted personally expressive communication of user wants and needs. Personal 'emotional' communication now provides psychological benefits for the wearer, such as trust and loyalty to the brand.

Creativity through co-design (Holborn, 1995) is no longer the preserve of the 'creative class'. In Shop One clothing is an expressive medium; it facilitates individualistic expression, allowing individuals to differentiate themselves, to declare their uniqueness and target their spending power. Clothing aesthetics that can be dynamically personalised will encourage new ways of creative thinking through aesthetic, informative and cultural explorations. Active and interactive customisation has led to new forms of 'creative thinking'. The designer has become a facilitator,

enabling users to 'co-create' and appropriate technology (Inns, 2007). The shift towards a democracy of design has brought changes to the fashion industry in terms of the role of the designer, the manufacture of garments, and the fashion cycle of seasonal trends. Wide-scale design of infrastructure for computation, communication and collaboration, contribute to 'design for appropriation' in the urban landscape. Rationalisation is unfolding, the demise of the in-built obsolescence of fashion has taken place. Transparency demands the true cost of natural and manmade materials and the inclusion of the garment miles carbon footprint. Demand for high-specification up-cycled products with more sustainable production, consumption and disposal now exists.

4. Conclusion - The Future

Polarisation of opinion with regard to sustainability has occurred between those who believe and or care and those who do not, even if there is general agreement that climate change is affecting us all. This polarisation is mirrored in the fashion industry between companies who believe and or care and those who do not. In reality most businesses 'know' little about their supply and disposal chain (refer Fig. VI) and the further they are away from the company headquarters the less they 'know'.

Figure VI. The Fashion Textile Knowledge Mountain

As the majority of retailers continue their patronising approach to understanding consumers, employing dated qualitative research and a cynical smokescreen of fair trade, ethical production and 'green wash', a new paradigm and engagement is taking place at the other end of the business spectrum. It could be argued that the burgeoning interest in sustainability enabled by accessible information and product and systems innovation will provide new paradigm solutions. Products using new systems supplied to Shop One will be in contrast to old supply chain invisibility and massification driven by lowest price and supplied to Shop Two. However

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both systems cater for early and late adopters in fashion and each have the potential to seize

opportunity to improve their practices for the future survival of the industry.

"We are entering a world of ecologism, efficiency, measurements and zero-waste which is not

good. The time for eco efficiency or 'guilt management' is over. It is eco effectiveness which is

the way to go. Lets aim for and celebrate a BIG footprint, but do everything well."[x]

If we can adopt this statement as a fashion mantra we can continue to take great pleasure in

fashion consumption and survive.

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